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CASE REPORT

Successful Non-surgical Management of Traumatic Pseudoaneurysm of the Axillary Artery by Duplex Guided Compression Obliteration

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Introduction

Duplex-guided compression obliteration of pseudoaneurysms has been reported as a safe and successful means to replace surgery and manage most cases of traumatic false aneurysms of the femoral artery.[1,2] Pressure is exerted by manual compression of the probe towards the aneurysmal cavity thus achieving complete cessation of flow in the aneurysm leading to thrombosis. Maintaining sufficient distal arterial runoff during the procedure prevents limb ischaemia. This is the first report of the use of this technique on the axillary artery, and one of very few reports describing the technique in locations other than in the femoral artery.[3]

Case Report

A 49-year-old male with diffuse arteriosclerosis was admitted to undergo transaxillary aortography to prove the presumed diagnosis of chronic intestinal ischaemia. The patient previously underwent axillofemoral bypass grafting due to occlusion of the right limb of an old aortobifemoral graft which prevented us from using the more conventional transfemoral angiographic approach. Warfarin was stopped prior to admission and a normal International Normalised Ratio (INR) was obtained prior to the angiographic examination. Following angiography the patient underwent a successful aortomesenteric bypass operation. Four days after surgery (and 1 week after angiography) the patient developed severe oedema of his left arm with neurological impairment. Duplex investigation for suspected subclavian vein thrombosis revealed a 4.5×5.7 cm false aneurysm at the angiography puncture site of the left axillary artery, causing extraluminal venous compression without thrombosis but obstructing the venous outflow and probably causing the neurological deficits (Fig. 1). The arterial runoff was preserved. Based on the inconvenient and deep axillary location of the pulsating mass we elected to attempt a duplex-guided compression obliteration of the lesion as previously described.[1,2,4] Compression time was 45 min. The procedure was successful and no morbidity was associated with it. Follow-up examination showed gradual resolution of the lesion with no recurrence, diminished venous outflow obstruction and improved neurological function.

Discussion

Pseudoaneurysms are usually the result of local arterial damage following diagnostic or therapeutic catheterisations through the femoral artery. Less often they develop at other vascular access puncture sites (haemodialysis fistulae and shunts). They are pulsatile haematomas that result from leakage of blood into the periarterial soft tissues with subsequent encapsulation and failure of the defect in the vessel wall to heal. Differential diagnoses include simple haematoma, tissue oedema, thrombosed pseudoaneurysm and lymphadenopathy. According to various reports pseudoaneurysms occur in approximately 0.05–0.4% of

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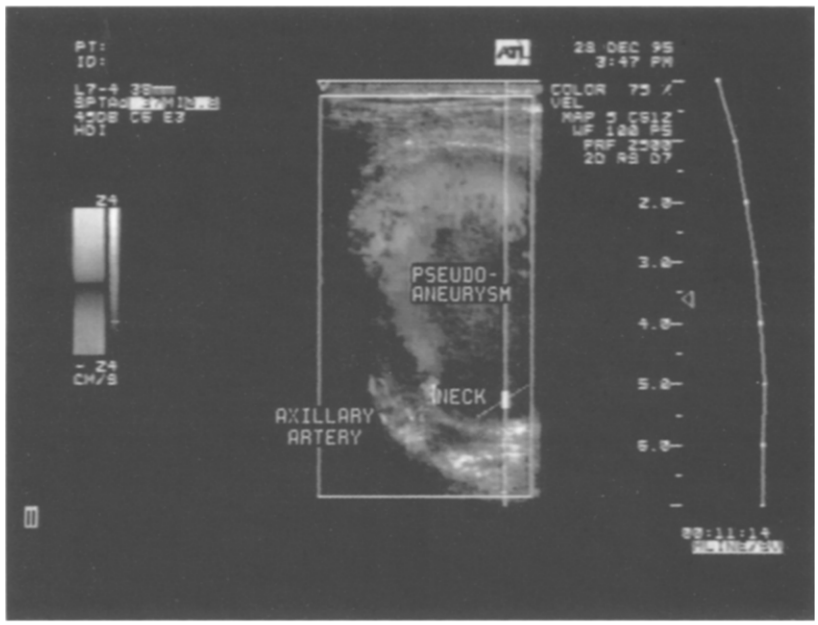

Fig. 1. Duplex flow image, sagittal view, of the axillary artery, the pseudoaneurysm and the communicating neck before manual occlusion.

invasive arterial procedures,[1,2] although some reports mention an enormously high occurrence rate of 9%.[5] It is reported that the more complex the invasive procedure, the higher the incidence.[5] Pseudoaneurysms occur more often in the elderly, in association with hypertension or anticoagulation, with large calibre catheters or when an improper technique is used. Angiography was the definitive mode of diagnosis until 1987 when the report by Mitchell *et al.*[6] described the diagnosis of pseudoaneurysm with colour Doppler ultrasound. Previously surgical repair was used to prevent the risk of expansion, rupture or thromboembolism. The introduction of duplex ultrasonography has changed both the diagnostic approach and the clinical management in these cases making it possible to diagnose them without angiography, and to treat them without operation. Most cases follow diagnostic or therapeutic catheterisations through the femoral artery. Pseudoaneurysms developing at other sites do occur but are rare. The application of the duplex-guided compression obliteration technique has only anecdotally been described in sites other than the femoral artery.[3] This is the first report of this kind of procedure in the axillary artery. Thus, duplex scan-guided compression obliteration of false aneurysms can be successful in the management of traumatic and post-catheterisation lesions developing in additional sites other than in the more common femoral pseudoaneurysms. Contraindications to compressive obliteration of the lesions include local skin ischaemia, limb ischaemia, infection, proximal arterial or graft stenosis, anastomotic stenosis, compromised runoff and large defects. This case illustrates the potential use of duplex-guided compression obliteration as a cheap and simple alternative to surgery in a variety of pseudoaneurysms that previously needed surgical repair.

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